



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/415,901

10/08/1999

NITIN VAIDYA

1018.051US1

5437

23460

7590

02/04/2004

LEYDIG VOIT & MAYER, LTD
TWO PRUDENTIAL PLAZA, SUITE 4900
180 NORTH STETSON AVENUE
CHICAGO, IL 60601-6780

EXAMINER

RYMAN, DANIEL J

ART UNIT

PAPER NUMBER

2665

DATE MAILED: 02/04/2004

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/415,901

Applicant(s)

VAIDYA ET AL.

Examiner

Daniel J. Ryman

Art Unit

2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 12, 13, 15 and 17-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 12, 13, 15 and 17-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-7, 12, 13, 15, and 17-23 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claims 1 and 17 are objected to because of the following informalities: the phrasing "transmitting the packet ... interval; detecting a collision; calculating a second back-off interval" implies that a collision is inevitable. The Examiner suggests changing the wording to "transmitting the packet ... interval; checking for a collision; upon detecting a collision, calculating a second back-off interval". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As worded, claims 7 and 23 do not disclose how the tagging of the packet is related to the determining step. Examiner suggests changing "wherein tagging a packet with a start tag comprises determining a greater of a virtual clock and a finish tag of a previous packet" to "wherein tagging a packet with a start tag comprises determining the start tag as the greater of a virtual clock and a finish tag of a previous packet". For the purposes of prior art rejections, Examiner will interpret claims 7 and 23 to read as suggested above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 12, 13, 15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Berkema et al (USPN 5,699,515).

7. Regarding claims 1 and 17, Berkema discloses a computer-implemented method for distributed fair scheduling and a machine-readable medium having instructions stored thereon for execution by a processor (state machine) to perform a method (col. 2, line 56-col. 3, line 20) comprising: calculating a first back-off interval for a packet (col. 1, line 57-col. 2, line 17); transmitting the packet at a time that is based, at least in part, on the first back-off interval (col. 1, line 57-col. 2, line 17); detecting a collision (col. 2, lines 18-39); calculating a second back-off interval based, at least in part, on the first back-off interval (col. 2, lines 18-39); and retransmitting the packet at a time that is based, at least in part, on the second back-off interval (col. 2, lines 18-39).

8. Regarding claim 12, Berkema discloses a computerized system comprising: a link through which packets are transmitted (col. 2, line 56-col. 3, line 20); and a plurality of nodes, each node transmitting a packet through the link at a time based, at least in part, on a first back-off interval (col. 1, line 57-col. 2, line 17 and col. 2, line 56-col. 3, line 20); and transmitting the packet through the link at a time based, at least in part, on a second back-off interval that is based, at least in part, on the first back-off interval when a collision occurs (col. 2, lines 18-39).

Art Unit: 2665

9. Regarding claim 13, referring to claim 12, Berkama discloses that each node comprises a controller at which the packet for the node is received for transmission through the link (col. 1, line 57-col. 2, line 39 and col. 2, line 56-col. 3, line 20).

10. Regarding claim 15, Berkama discloses a computer comprising: at least one application generating one or more packets for transmission through a link operatively coupled to the computer (col. 2, line 56-col. 3, line 20); and a controller (state machine) to receive each packet as generated by the at least one application and to transmit each packet through the link at a time based, at least in part, on a first back-off interval (col. 1, line 57-col. 2, line 17 and col. 2, line 56-col. 3, line 20); wherein a packet is transmitted through the link at a time based, at least in part, on a second back-off interval that is based, at least in part, on the first back-off interval when a collision occurs (col. 2, lines 18-39).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkema et al (USPN 5,699,515) as applied to claims 1 and 17 above, and further in view of Brown (USPN 5,268,899).

13. Regarding claims 2 and 18, referring to claims 1 and 17, Berkama does not expressly disclose that the first back-off interval is based, at least in part, on an arrival time of the packet; however, Berkama does disclose that the first back-off interval is based, at least in part, on a

Art Unit: 2665

random number generator and a backoff value (col. 1, line 57-col. 2, line 17). Brown teaches, in a system for generating a random number, generating a random number using a behavior that varies from node to node such as a transmission time (col. 2, lines 33-46) in order to minimize “the possibility of having pseudo-random number generators at two nodes in the network operating in lock-step” (col. 2, lines 24-30). Brown also teaches that a variety of signals can be used other than the transmission time (col. 7, lines 33-41). Examiner takes official notice that the arrival time of a packet will vary from node to node. It would have been obvious to one of ordinary skill in the art at the time of the invention to base the first back-off interval, at least in part, on an arrival time of the packet in order to minimize the possibility of having pseudo-random number generators at two nodes in the network operating in lock-step.

14. Claims 3-5, 7, 19-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkema et al (USPN 5,699,515) as applied to claims 1 and 17 above, and further in view of Yang et al (USPN 5,905,730) in further view of Tout et al (USPN 5,991,295).

15. Regarding claims 3 and 19, referring to claims 1 and 17, Berkama discloses receiving the packet at a node (col. 1, line 57-col. 2, line 39). Berkama does not expressly disclose tagging the packet with a start tag; however, Berkama does disclose that modifications are possible in the system (col. 6, lines 30-37). Yang teaches, in a packet transmission system, assigning a packet a start time in order to minimize “packet delay for packet transmission from a plurality of sessions which may have different requirements and may operate at different transfer rates” (col. 2, lines 16-36). Tout teaches using internal tags, within a switch, where a switch is a network device which uses scheduling, to attach to a packet any information needed by the switch about a particular packet (col. 1, lines 39-52). It would have been obvious to one of ordinary skill in the

art at the time of the invention to tag the packet with a start tag in order to minimize packet delay for packet transmission from a plurality of sessions which may have different requirements and may operate at different transfer rates when scheduling packets for transfer over the link.

16. Regarding claims 4 and 20, referring to claims 3 and 19, Berkama in view of Yang in further view of Tout discloses resetting a virtual clock (Yang: col. 4, lines 63-67).

17. Regarding claims 5 and 21, referring to claims 4 and 20, Berkama in view of Yang in further view of Tout does not expressly disclose, but strongly suggests, updating the virtual clock, when the packet is transmitted, to the start tag of the packet if the start tag exceeds the virtual clock. Berkama in view of Yang in further view of Tout discloses that the system virtual time “always keeps up with the virtual start time of the packet being served” (Yang: col. 5, lines 50-63). In order to efficiently use system bandwidth, the transmission of one packet should closely follow the transmission of another packet. In order to do this, the start time of one packet must closely follow after the finish time of a preceding packet. It would have been obvious to one of ordinary skill in the art at the time of the invention to update the virtual clock, when a packet is transmitted from a node onto a link, to the start tag of the packet upon determining that the start tag exceeds the virtual clock in order to ensure that the current packet begins its transmission immediately following the end of the transmission of the previous packet such that the system efficiently uses its bandwidth.

18. Regarding claims 7 and 23, referring to claims 3 and 19, Berkama in view of Yang in further view of Tout discloses that the start tag is determined based upon, among other things, the finish time of the previous packet (Yang: col. 2, lines 22-26); however, Berkama in view of Yang in further view of Tout does not disclose how the finish time of the previous packet is used

Art Unit: 2665

in determining the start tag of the current packet. While Berkama in view of Yang in further view of Tout does not expressly disclose tagging a packet with a start tag comprises determining a greater of a virtual clock and a finish tag of a previous packet, this step would have been obvious to one of ordinary skill in the art. The finish tag of the previous packet is the time when the transmission of the previous packet should be finished. By determining the start tag as greater of a virtual clock and a finish tag of a previous packet, the device avoids collisions by ensuring that it will not start transmitting a packet before a previous packet has finished transmitting. It would have been obvious to one of ordinary skill in the art at the time of the invention to determine the start tag as greater of a virtual clock and a finish tag of a previous packet in order to avoid causing a collision between a current and a previous packet.

19. Claims 6 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkema et al (USPN 5,699,515) in view of Yang et al (USPN 5,905,730) in further view of Tout et al (USPN 5,991,295) as applied to claims 4 and 20 above, and further in view of Brown (USPN 5,268,899).

20. Regarding claims 6 and 22, referring to claims 4 and 20, Berkama in view of Yang in further view of Tout does not expressly disclose that the first back-off interval is based, at least in part, on the virtual clock; however, Berkama in view of Yang in further view of Tout does disclose that the first back-off interval is based, at least in part, on a random number generator and a backoff value (Berkama: col. 1, line 57-col. 2, line 17). Brown teaches, in a system for generating a random number, generating a random number using a behavior that varies from node to node such as a transmission time (col. 2, lines 33-46) in order to minimize “the possibility of having pseudo-random number generators at two nodes in the network operating in

Art Unit: 2665

lock-step" (col. 2, lines 24-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to base the first back-off interval, at least in part, on the virtual clock in order to minimize the possibility of having pseudo-random number generators at two nodes in the network operating in lock-step where the virtual clock is used for determining the transmission time.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Guthrie et al (USPN 5,910,956) see entire document which pertains to a random number generator which generates a random number based upon an external signal (i.e. arrival time).

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2665

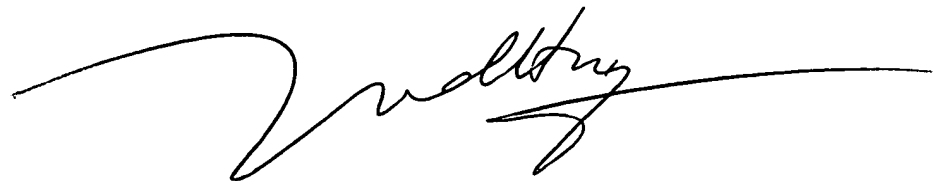
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The examiner can normally be reached on Mon.-Fri. 7:00-5:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703)308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703)308-6743.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Daniel J. Ryman
Examiner
Art Unit 2665


Daniel J. Ryman



HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600